Full wwPDB X-ray Structure Validation Report (i)

Sep 5, 2023 – 04:11 AM EDT

PDB ID	:	3UCQ
Title	:	Crystal structure of amylosucrase from Deinococcus geothermalis
Authors	:	Guerin, F.; Pizzut-Serin, S.; Guillet, V.; Mourey, L.; Potocki-Veronese, G.; Remaud-Simeon, M.; Andre, I.; Tranier, S.
Deposited on	:	2011-10-27
Resolution	:	1.97 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (i)) were used in the production of this report:

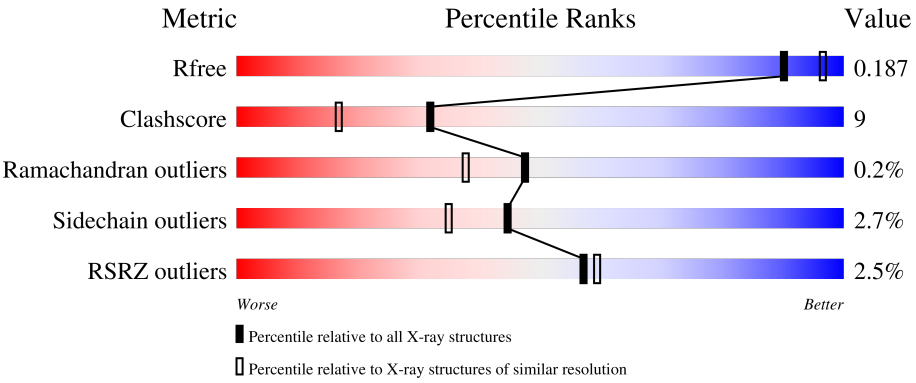
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.97 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	11647 (2.00-1.96)
Clashscore	141614	1014 (1.98-1.98)
Ramachandran outliers	138981	1006 (1.98-1.98)
Sidechain outliers	138945	1006 (1.98-1.98)
RSRZ outliers	127900	11410 (2.00-1.96)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	655	2% 83% 15% ••

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	GOL	A	713	-	-	X	-

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	GOL	A	714	-	-	X	-
3	GOL	A	720	-	X	X	-
3	GOL	A	721	-	-	X	-
3	GOL	A	722	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 5956 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

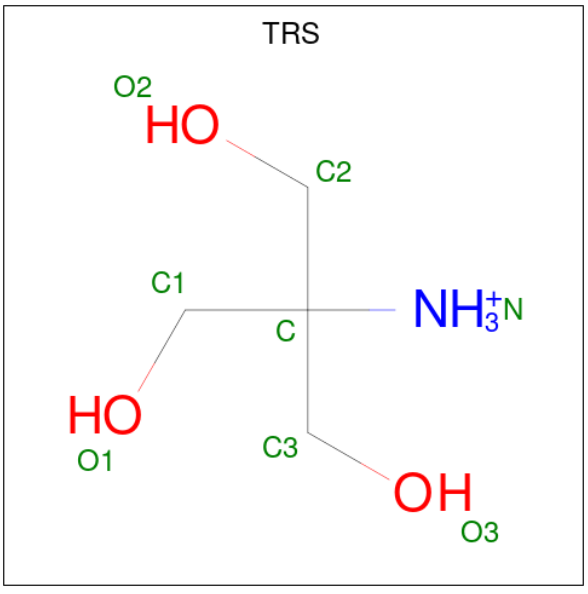
- Molecule 1 is a protein called Amylosucrase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	651	5268	3348	957	948	15	0	17	0

There are 5 discrepancies between the modelled and reference sequences:

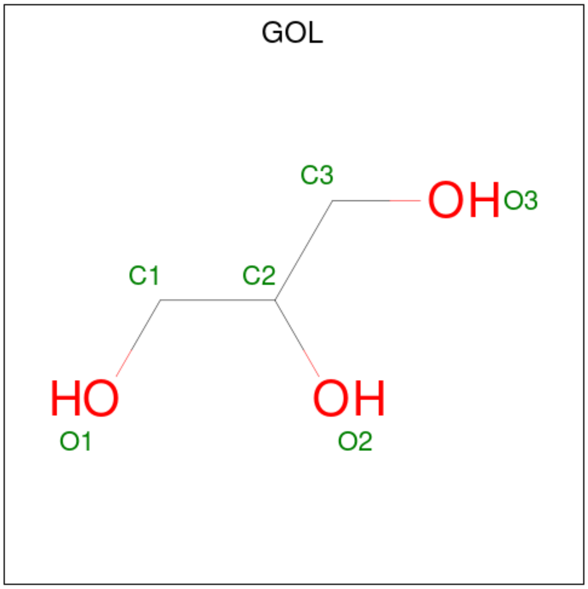
Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	GLY	-	expression tag	UNP Q1J0W0
A	-3	PRO	-	expression tag	UNP Q1J0W0
A	-2	LEU	-	expression tag	UNP Q1J0W0
A	-1	GLY	-	expression tag	UNP Q1J0W0
A	0	SER	-	expression tag	UNP Q1J0W0

- Molecule 2 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: $C_4H_{12}NO_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C N O 8 4 1 3	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 3 3	0	0
3	A	1	Total C O 6 3 3	0	0

- Molecule 4 is water.

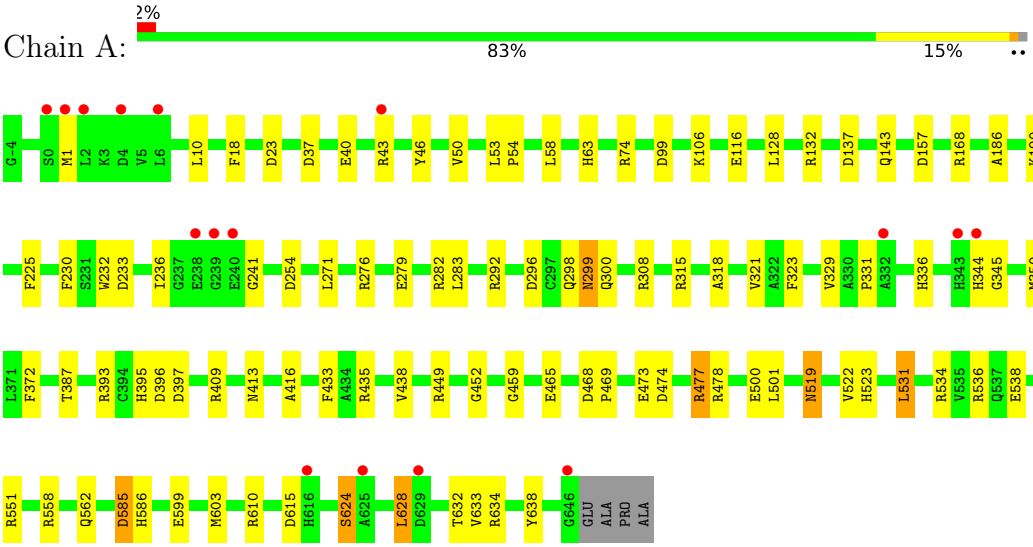
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	602	Total O 602 602	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Amylosucrase

Chain A:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	105.32Å 110.20Å 115.52Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	33.22 – 1.97 33.22 – 1.97	Depositor EDS
% Data completeness (in resolution range)	99.3 (33.22-1.97) 99.3 (33.22-1.97)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.43 (at 1.97Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.145 , 0.188 0.145 , 0.187	Depositor DCC
R_{free} test set	2394 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	17.3	Xtriage
Anisotropy	0.019	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 50.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.028 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	5956	wwPDB-VP
Average B, all atoms (Å^2)	18.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.44% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: TRS, GOL

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	1.12	4/5434 (0.1%)	0.99	24/7389 (0.3%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	500	GLU	CB-CG	5.47	1.62	1.52
1	A	230	PHE	CE2-CZ	5.06	1.47	1.37
1	A	477[A]	ARG	CG-CD	5.05	1.64	1.51
1	A	477[B]	ARG	CG-CD	5.05	1.64	1.51

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	478	ARG	NE-CZ-NH1	-14.46	113.07	120.30
1	A	478	ARG	NE-CZ-NH2	10.36	125.48	120.30
1	A	634	ARG	NE-CZ-NH2	-7.60	116.50	120.30
1	A	634	ARG	NE-CZ-NH1	7.25	123.93	120.30
1	A	545	ARG	NE-CZ-NH1	7.21	123.90	120.30
1	A	393	ARG	NE-CZ-NH1	-7.08	116.76	120.30
1	A	393	ARG	NE-CZ-NH2	7.04	123.82	120.30
1	A	370	ARG	NE-CZ-NH1	-7.02	116.79	120.30
1	A	545	ARG	NE-CZ-NH2	-6.88	116.86	120.30
1	A	534	ARG	NE-CZ-NH1	-6.75	116.92	120.30
1	A	315[A]	ARG	NE-CZ-NH1	6.69	123.64	120.30
1	A	315[B]	ARG	NE-CZ-NH1	6.69	123.64	120.30
1	A	99	ASP	CB-CG-OD1	6.23	123.91	118.30
1	A	477[A]	ARG	NE-CZ-NH1	5.70	123.15	120.30
1	A	477[B]	ARG	NE-CZ-NH1	5.70	123.15	120.30
1	A	276	ARG	NE-CZ-NH2	-5.64	117.48	120.30
1	A	370	ARG	NE-CZ-NH2	5.48	123.04	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	132	ARG	NE-CZ-NH2	-5.48	117.56	120.30
1	A	53	LEU	CA-CB-CG	5.38	127.68	115.30
1	A	296	ASP	CB-CG-OD1	5.29	123.06	118.30
1	A	74	ARG	NE-CZ-NH2	-5.28	117.66	120.30
1	A	308	ARG	NE-CZ-NH1	5.27	122.94	120.30
1	A	192	ARG	NE-CZ-NH1	-5.14	117.73	120.30
1	A	534	ARG	NE-CZ-NH2	5.10	122.85	120.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5268	0	5130	82	0
2	A	8	0	12	3	0
3	A	78	0	103	28	0
4	A	602	0	0	22	0
All	All	5956	0	5245	94	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

All (94) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:137:ASP:OD2	3:A:720:GOL:H12	1.26	1.25
3:A:714:GOL:H11	4:A:1344:HOH:O	1.52	1.08
1:A:435[A]:ARG:NH1	4:A:1062:HOH:O	1.92	1.02
1:A:603:MET:HB3	1:A:632[A]:THR:HG21	1.44	1.00
1:A:473:GLU:HG3	1:A:477[B]:ARG:CZ	1.95	0.95
3:A:717:GOL:H11	4:A:1300:HOH:O	1.67	0.94
1:A:352:TYR:CE2	3:A:721:GOL:H32	2.04	0.92
1:A:137:ASP:OD2	3:A:720:GOL:C1	2.17	0.89
1:A:558[A]:ARG:NH1	4:A:1048:HOH:O	2.09	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:190:LYS:HD2	4:A:983:HOH:O	1.76	0.84
3:A:712:GOL:H12	3:A:714:GOL:O2	1.79	0.83
1:A:318:ALA:O	1:A:321[A]:VAL:HG22	1.79	0.82
1:A:585[A]:ASP:OD1	4:A:1199:HOH:O	1.97	0.81
1:A:452:GLY:H	1:A:523:HIS:HD2	1.31	0.79
1:A:473:GLU:HG3	1:A:477[A]:ARG:HD2	1.65	0.78
1:A:473:GLU:CG	1:A:477[B]:ARG:CZ	2.62	0.78
1:A:299:ASN:ND2	1:A:329:VAL:HG11	1.98	0.77
1:A:413:ASN:HD22	1:A:416:ALA:H	1.33	0.77
1:A:409:ARG:NH2	4:A:1029:HOH:O	2.15	0.77
3:A:714:GOL:H31	4:A:1344:HOH:O	1.85	0.76
1:A:474:ASP:HA	1:A:477[A]:ARG:HD3	1.68	0.74
1:A:501:LEU:HB3	1:A:531:LEU:HD13	1.70	0.73
1:A:299:ASN:HD21	1:A:329:VAL:HG11	1.50	0.73
1:A:336:HIS:HD2	4:A:1254:HOH:O	1.74	0.70
1:A:473:GLU:HG3	1:A:477[B]:ARG:NH2	2.06	0.70
1:A:292:ARG:HH11	1:A:300:GLN:HE21	1.41	0.69
1:A:232:TRP:O	3:A:716:GOL:H12	1.94	0.68
1:A:225:PHE:HA	3:A:718:GOL:H32	1.74	0.68
3:A:721:GOL:H31	4:A:907:HOH:O	1.94	0.67
3:A:710:GOL:H11	4:A:1208:HOH:O	1.94	0.67
1:A:551:ARG:CZ	3:A:722:GOL:H31	2.25	0.66
1:A:536:ARG:NH1	3:A:715:GOL:H2	2.11	0.65
1:A:299:ASN:ND2	1:A:329:VAL:CG1	2.59	0.64
1:A:452:GLY:H	1:A:523:HIS:CD2	2.13	0.64
1:A:50:VAL:O	1:A:54:PRO:HD3	1.98	0.64
1:A:190:LYS:NZ	3:A:713:GOL:O1	2.30	0.64
1:A:299:ASN:HD21	1:A:329:VAL:CG1	2.11	0.63
1:A:435[B]:ARG:NH1	1:A:465:GLU:OE1	2.28	0.61
1:A:106:LYS:HE2	1:A:157:ASP:OD1	2.00	0.61
3:A:712:GOL:H12	3:A:714:GOL:HO2	1.65	0.61
1:A:547:ASN:HD21	1:A:551:ARG:HE	1.49	0.59
1:A:37:ASP:C	4:A:1388:HOH:O	2.40	0.59
1:A:186:ALA:O	1:A:190:LYS:HG3	2.02	0.58
1:A:40:GLU:HG2	1:A:43[C]:ARG:HH21	1.68	0.57
1:A:282:ARG:HH21	3:A:721:GOL:C1	2.17	0.57
1:A:46:TYR:HB2	1:A:50:VAL:HG23	1.87	0.56
1:A:473:GLU:CG	1:A:477[B]:ARG:NH2	2.67	0.56
1:A:331:PRO:HG2	4:A:1010:HOH:O	2.05	0.56
1:A:37:ASP:OD2	1:A:345:GLY:HA3	2.06	0.55
1:A:519:ASN:HD22	1:A:519:ASN:C	2.11	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:700:TRS:H32	3:A:720:GOL:O2	2.08	0.53
3:A:720:GOL:H31	4:A:1356:HOH:O	2.08	0.53
1:A:298:GLN:NE2	4:A:1378:HOH:O	2.37	0.53
1:A:233:ASP:O	1:A:241:GLY:HA3	2.08	0.52
1:A:562:GLN:HA	1:A:586:HIS:CD2	2.45	0.51
1:A:610[B]:ARG:HD3	1:A:628:LEU:O	2.10	0.51
1:A:236:ILE:O	1:A:241:GLY:HA2	2.10	0.51
1:A:63:HIS:HE1	4:A:974:HOH:O	1.93	0.50
1:A:396:ASP:OD2	2:A:700:TRS:H31	2.12	0.50
1:A:46:TYR:HB2	1:A:50:VAL:CG2	2.42	0.49
1:A:473:GLU:OE2	1:A:477[B]:ARG:NH1	2.46	0.48
3:A:722:GOL:H32	4:A:914:HOH:O	2.13	0.48
1:A:283:LEU:HD21	1:A:323[B]:PHE:HD1	1.78	0.48
1:A:435[B]:ARG:HD2	4:A:911:HOH:O	2.14	0.47
1:A:282:ARG:HH21	3:A:721:GOL:H11	1.78	0.47
3:A:714:GOL:C3	4:A:1344:HOH:O	2.53	0.47
1:A:10:LEU:HD21	1:A:54:PRO:HB3	1.97	0.46
1:A:222:PHE:CE1	2:A:700:TRS:H11	2.50	0.46
1:A:336:HIS:CD2	4:A:1254:HOH:O	2.59	0.46
3:A:713:GOL:H32	4:A:1349:HOH:O	2.16	0.46
1:A:610[A]:ARG:NE	1:A:615:ASP:OD1	2.34	0.45
1:A:551:ARG:NE	3:A:722:GOL:H31	2.32	0.45
1:A:632[A]:THR:HG22	1:A:633:VAL:N	2.32	0.45
1:A:603:MET:CB	1:A:632[A]:THR:HG21	2.30	0.44
1:A:116:GLU:OE1	1:A:168:ARG:HD2	2.18	0.43
1:A:438:VAL:O	3:A:714:GOL:H2	2.18	0.43
1:A:395:HIS:O	1:A:523:HIS:HE1	2.02	0.43
1:A:18:PHE:CD2	1:A:23:ASP:HB3	2.55	0.42
1:A:190:LYS:HE3	3:A:713:GOL:O1	2.19	0.42
1:A:397:ASP:OD1	1:A:397:ASP:N	2.52	0.42
1:A:10:LEU:HD21	1:A:54:PRO:CB	2.49	0.42
1:A:190:LYS:CE	3:A:713:GOL:O1	2.67	0.42
1:A:551:ARG:NH2	3:A:722:GOL:H31	2.34	0.42
1:A:186:ALA:HB1	3:A:713:GOL:H2	2.02	0.42
1:A:344:HIS:HD2	4:A:1196:HOH:O	2.02	0.41
1:A:473:GLU:HG3	1:A:477[B]:ARG:NE	2.28	0.41
1:A:279:GLU:O	1:A:321[A]:VAL:HA	2.20	0.41
1:A:298:GLN:O	1:A:299:ASN:CB	2.69	0.41
1:A:599:GLU:HG3	1:A:638:TYR:CE2	2.54	0.41
1:A:468:ASP:HA	1:A:469:PRO:HD3	1.75	0.41
1:A:350:MET:HA	1:A:387:THR:O	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:271:LEU:HD23	1:A:271:LEU:HA	1.87	0.41
1:A:433:PHE:O	1:A:459:GLY:HA2	2.22	0.40
1:A:58:LEU:HD23	1:A:58:LEU:HA	1.84	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	667/655 (102%)	649 (97%)	17 (2%)	1 (0%)	51 42

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	624	SER

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	535/532 (101%)	519 (97%)	16 (3%)	41 29

All (16) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	128	LEU
1	A	143[A]	GLN
1	A	143[B]	GLN
1	A	254	ASP
1	A	299	ASN
1	A	372	PHE
1	A	449	ARG
1	A	519	ASN
1	A	522	VAL
1	A	531	LEU
1	A	538	GLU
1	A	585[A]	ASP
1	A	585[B]	ASP
1	A	624	SER
1	A	628	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	63	HIS
1	A	299	ASN
1	A	300	GLN
1	A	336	HIS
1	A	344	HIS
1	A	413	ASN
1	A	519	ASN
1	A	523	HIS
1	A	547	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

14 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	GOL	A	716	-	5,5,5	0.36	0	5,5,5	0.56	0
3	GOL	A	722	-	5,5,5	0.44	0	5,5,5	0.76	0
3	GOL	A	710	-	5,5,5	0.53	0	5,5,5	0.89	0
3	GOL	A	715	-	5,5,5	0.65	0	5,5,5	1.17	0
2	TRS	A	700	-	7,7,7	0.58	0	9,9,9	1.93	5 (55%)
3	GOL	A	714	-	5,5,5	0.64	0	5,5,5	0.45	0
3	GOL	A	711	-	5,5,5	0.38	0	5,5,5	0.68	0
3	GOL	A	721	-	5,5,5	0.59	0	5,5,5	0.63	0
3	GOL	A	717	-	5,5,5	0.86	0	5,5,5	1.09	0
3	GOL	A	718	-	5,5,5	0.67	0	5,5,5	2.08	2 (40%)
3	GOL	A	712	-	5,5,5	0.63	0	5,5,5	0.91	0
3	GOL	A	719	-	5,5,5	0.58	0	5,5,5	0.80	0
3	GOL	A	720	-	5,5,5	0.39	0	5,5,5	2.01	2 (40%)
3	GOL	A	713	-	5,5,5	1.04	1 (20%)	5,5,5	1.15	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	716	-	-	0/4/4/4	-
3	GOL	A	722	-	-	2/4/4/4	-
3	GOL	A	710	-	-	1/4/4/4	-
3	GOL	A	715	-	-	0/4/4/4	-
2	TRS	A	700	-	-	4/9/9/9	-
3	GOL	A	714	-	-	0/4/4/4	-
3	GOL	A	711	-	-	0/4/4/4	-
3	GOL	A	721	-	-	1/4/4/4	-
3	GOL	A	717	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	718	-	-	3/4/4/4	-
3	GOL	A	712	-	-	3/4/4/4	-
3	GOL	A	719	-	-	4/4/4/4	-
3	GOL	A	720	-	-	4/4/4/4	-
3	GOL	A	713	-	-	2/4/4/4	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	713	GOL	O2-C2	-2.27	1.36	1.43

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	720	GOL	C3-C2-C1	-3.39	98.51	111.70
2	A	700	TRS	O2-C2-C	-2.63	102.67	111.00
3	A	720	GOL	O2-C2-C1	-2.60	97.68	109.12
2	A	700	TRS	C3-C-C2	2.56	118.74	110.81
3	A	718	GOL	O2-C2-C1	2.56	120.38	109.12
2	A	700	TRS	C2-C-N	-2.55	100.36	107.98
2	A	700	TRS	C3-C-C1	-2.42	103.30	110.81
2	A	700	TRS	C1-C-N	2.25	114.70	107.98
3	A	718	GOL	O3-C3-C2	2.22	120.86	110.20

There are no chirality outliers.

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	700	TRS	C2-C-C1-O1
2	A	700	TRS	C3-C-C1-O1
2	A	700	TRS	N-C-C1-O1
3	A	712	GOL	O1-C1-C2-O2
3	A	712	GOL	O1-C1-C2-C3
3	A	713	GOL	C1-C2-C3-O3
3	A	717	GOL	O1-C1-C2-C3
3	A	718	GOL	O1-C1-C2-C3
3	A	718	GOL	C1-C2-C3-O3
3	A	719	GOL	C1-C2-C3-O3
3	A	720	GOL	O1-C1-C2-C3
3	A	720	GOL	C1-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
3	A	720	GOL	O2-C2-C3-O3
3	A	722	GOL	O1-C1-C2-C3
3	A	722	GOL	O1-C1-C2-O2
3	A	710	GOL	O1-C1-C2-C3
3	A	712	GOL	C1-C2-C3-O3
3	A	719	GOL	O1-C1-C2-C3
3	A	719	GOL	O1-C1-C2-O2
3	A	719	GOL	O2-C2-C3-O3
3	A	718	GOL	O1-C1-C2-O2
3	A	720	GOL	O1-C1-C2-O2
3	A	717	GOL	O1-C1-C2-O2
3	A	713	GOL	O2-C2-C3-O3
3	A	721	GOL	O1-C1-C2-O2
2	A	700	TRS	C1-C-C2-O2

There are no ring outliers.

12 monomers are involved in 30 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	716	GOL	1	0
3	A	722	GOL	4	0
3	A	710	GOL	1	0
3	A	715	GOL	1	0
2	A	700	TRS	3	0
3	A	714	GOL	6	0
3	A	721	GOL	4	0
3	A	717	GOL	1	0
3	A	718	GOL	1	0
3	A	712	GOL	2	0
3	A	720	GOL	4	0
3	A	713	GOL	5	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	651/655 (99%)	-0.21	16 (2%) 57 59	7, 15, 34, 45	0

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	239	GLY	3.9
1	A	240	GLU	3.9
1	A	1	MET	3.7
1	A	646	GLY	3.4
1	A	6	LEU	3.2
1	A	4	ASP	3.0
1	A	629	ASP	3.0
1	A	0	SER	2.7
1	A	625	ALA	2.6
1	A	2	LEU	2.3
1	A	616	HIS	2.3
1	A	344	HIS	2.2
1	A	238	GLU	2.2
1	A	343	HIS	2.1
1	A	332	ALA	2.1
1	A	43[A]	ARG	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	GOL	A	714	6/6	0.78	0.37	39,51,53,54	0
3	GOL	A	718	6/6	0.80	0.26	33,38,43,44	0
3	GOL	A	717	6/6	0.82	0.24	44,44,46,47	0
3	GOL	A	722	6/6	0.84	0.27	39,47,48,52	0
3	GOL	A	721	6/6	0.88	0.30	56,56,59,59	0
2	TRS	A	700	8/8	0.90	0.17	24,32,33,34	0
3	GOL	A	715	6/6	0.91	0.28	29,35,37,37	0
3	GOL	A	716	6/6	0.91	0.20	27,37,42,44	0
3	GOL	A	713	6/6	0.92	0.24	34,34,37,45	0
3	GOL	A	720	6/6	0.93	0.18	16,25,31,32	0
3	GOL	A	712	6/6	0.94	0.17	19,28,32,34	0
3	GOL	A	719	6/6	0.95	0.25	31,41,42,46	0
3	GOL	A	710	6/6	0.95	0.11	18,22,22,25	0
3	GOL	A	711	6/6	0.99	0.06	15,18,25,28	0

6.5 Other polymers (i)

There are no such residues in this entry.